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Developing patterns of parenting in two cultural communities

Heidi Keller,[1] Joern Borke,[1] Bettina Lamm,[1] Arnold Lohaus,[2] and Relindis Dzeaye Yovsi[1]

Abstract

This paper is aimed at analyzing verbal and nonverbal strategies in terms of body contact, face-to-face contact, and discourse style during the first three months of life in two cultural communities that have been characterized as embodying different cultural models of parenting: German middle-class, and Nso farmer families. It can be demonstrated that the Nso mothers have significantly higher rates of body contact during the assessments of free-play interactions during the first 12 weeks than the German women. The German women on the other hand demonstrate the expected increase of face-to-face contact, whereas the Nso women demonstrate a significantly lower and stable pattern of face-to-face contact over the assessments. The German mothers use an agentic discourse style, whereas the Nso mothers use a relational discourse style. Moreover, body contact and a relational discourse style form one parenting strategy, whereas face-to-face contact and the agentic discourse style form another parenting strategy. The results demonstrate culture-specific parenting strategies that not only differ with respect to the amount of behaviors expressed, but also the developmental course of particular behaviors. It is also evident that socialization strategies are expressed in different behavioral channels. The role of sociodemographic variables is particularly discussed with respect to their impact for defining sociocultural environments.

Keywords

cultural differences, discourse style, independence, interdependence, parenting

There is consensus across different conceptual frameworks that infants' early social experiences are crucial for the development of the concept of self. Current theories emphasize the primacy of perceptual, social, and affective factors in the structuring of the pre-symbolic self during the first months of life (Kopp & Brownell, 1991; Neisser, 1993).

The face-to-face interactional context especially is regarded as constituting an essential condition for self development (Keller, 1992; Papoušek & Papoušek, 1991). Face-to-face interactions are part of a distal parenting strategy, since the behavioral exchange is regulated through the distant senses (Keller, 2003). It is based on the structure of a (pseudo)dialogue, where both interactional partners equally contribute to the flow of the interactional exchange. Thus, the nature of these interactions is conversational with the baby being an active participant (Reddy, Hay, Murray, & Trevarthen, 1997; Stern, 1985; Trevarthen, 1998). The parent is supposed to take the baby's perspective and to respond sensitively to the baby's needs and wishes (Ainsworth, Blehar, Waters, & Wall, 1978). This attitude is especially expressed in contingent responsiveness, i.e., the parental readiness to react to infant signals within a short latency span of about a second (Keller, Lohaus, Voelker, Cappenberg, & Chasiotis, 1999; Papoušek & Papoušek, 1991). The prompt response to the infant signals is adapted to the short memory span and allows the perception of being the cause of others' action and thus an autonomous agent. Therefore, face-to-face contact constitutes a dyadic system that the infant can control (Chisholm, 2003). Consequently, the infant is informed about his or her individuality and self-efficacy. Early face-to-face interactional exchange thus is based on a mental model of the baby with preferences, needs, and wishes from birth on and the interpretation of the infant's behavior as intentional (Keller, Hentschel et al., 2004; Reddy et al., 1997). Children learn from early on to objectify themselves in others and learn about themselves as differentiated, unique entities (Rochat, 1997).

Longitudinal studies have revealed that the amount of facial exchange increases over the first months of life with a maximum at about 3 months of age. The 3-month age period has been described as the time span with the longest and most intensive gazing episodes which decrease afterwards to basically zero (Fogel, 1993; Voelker, 2002).

Face-to-face contact can be regarded as a universal system of parenting with comparable structural properties in cultural environments as diverse as Euro American, Greek, and German middle-class families, and Yanomami and Trobriand islander families (Keller, & Eibl-Eibesfeldt, 1989; Stern, 1985). Caregivers of all these cultural communities frame the eye contact of the infant with extensive looking into their infants' eyes. Nevertheless, the amount of face-to-face contact varies substantially across these cultural environments (Keller, Yovsi et al., 2004), even when infants' experiences with multiple caregivers are considered (see, e.g., Abels et al., 2005; Yovsi & Keller, 2003). Taken together, cross-cultural comparisons evidence that face-to-face contact is the most

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prominent system of parenting in urban educated middle-class families of Western societies where a separated agency has to meet the demands of self-contained and competitive social relationships (Keller, Borke et al., 2009; LeVine, 1977).

It has been empirically demonstrated that the early parenting experiences are related to children's further development. Face-to-face contact as well as the experience of contingency at the age of 3 months support the development of a categorical self as the first expression of a separate and autonomous agent. Toddlers who have experienced this distal strategy of parenting at 3 months of age recognize themselves earlier in the mirror recognition task (MSR) than toddlers who have experienced a more proximal parenting strategy with a prevalence of body contact (Keller, Yovsi et al., 2004).

Proximal parenting with extensive body contact is prevalent in eco-cultural contexts where infants are carried on the bodies of their mothers or other caregivers for a substantial part of the day—in LeVine's (1990) terminology, "back and hip cultures." The psychological function of body contact mainly consists of the experience of emotional warmth, which is associated with social cohesion (MacDonald, 1992), and feelings of relatedness and belongingness (e.g. Mize & Pettit, 1997). These feelings are associated with the acceptance of norms and values of the elder generation (Hetherington & Frankie, 1967). Warmth contributes to the child's willingness to embrace parental messages and values (Kochanska & Thompson, 1997), preparing the individual for a life which is based on harmony and respects hierarchy among family members or the primary social group (cf. Keller, Lohaus et al., 1999; Nsamenang & Lamb, 1994). Extensive body contact has been reported from foraging communities (Belsky, Steinberg, & Draper, 1991; Hewlett & Lamb, 2002). Also the West-African Nso farmers have been described as a back-and-hip culture. Small infants are in close body contact with their mothers and other caregivers day and night (Nsamenang & Lamb, 1994; Yovsi & Keller, 2003). The value of bodies contact is expressed in the Nso saying that mother and infant's bodies need to be glued together.

Body contact can be related to the development of an interdependent construal of the self (Keller, 2003; Keller, Yovsi et al., 2004). The cultural model of interdependence defines the self as basically interconnected with others and fluid with respect to contextual demands. Accordingly, behavior is not the expression of internal attributes, but rather a reflection of how behavior fits the interpersonal standard of the culture. The early experience of body contact facilitates the early development of self-regulation. Toddlers who have experienced a proximal parenting strategy with extensive body contact at 3 months of age develop compliance earlier than toddlers who have experienced a distal parenting strategy (Keller, Yovsi et al., 2004).

The cultural models of independence and interdependence are also embodied in the style with which caregivers talk to their children (Keller & Demuth, 2007; Ochs, 1988; Wang & Leichtman, 2000). It has been demonstrated that mothers with an independent cultural model of parenting, such as Euro-American or German middle-class mothers, focus on children's agency and mental states, preferences, wishes, and needs, whereas mothers with an interdependent cultural model of parenting, such as Chinese or rural Nso mothers, focus on the social context, moral obligations, and respect (Keller, Demuth, & Yovsi, 2008; Wang & Leichtman, 2000). These differences are already prevalent in interactions with babies that are only a few months old (Keller & Demuth, 2007; Rabain-Jamin & Sabeau-Jouannet, 1997). Maternal discourse practices have been demonstrated to relate to children's self-expressions in autobiographical memory when talking about past events (Leichtman, Wang, & Pillemer, 2003; Wang & Leichtman, 2000).

According to the ecocultural model of parenting (Keller, 2007), cultural models represent values and beliefs that are adapted to particular sociodemographic environments. Especially the level of formal education, the age at first birth, and the number of children have been found to form together pervasive socialization milieus that emphasize orientations towards autonomy and relatedness to different degrees. Two extremely different environments can be differentiated: urban middle class families with a high degree of formal education, late age at first birth and few offspring. Individuals who share these living arrangements favor the cultural model of independence, where autonomy also defines relationships between separated, self-contained individuals. A radically distinct way of living can be found in rural farming families with a low level of formal education, an early age at first birth, and many offspring. Individuals who share these living arrangements favor the cultural model of interdependence, where relatedness also defines agency as the joint contribution of individual competencies (Greenfield, 2004; LeVine 1990). With the present study we address these two prototypical socialization contexts of independence and interdependence: German middle-class families, and Cameroonian Nso farming families (Kärtner, Keller, & Yovsi, 2010; Keller, 2007). It is important to note that these prototypical contexts cannot be evaluated in terms of better or worse; they represent adaptive patterns of life with respect to different living arrangements. Qualitative differences can only be evaluated within each strategy (Yovsi, Kärtner, Keller, & Lohaus, 2009). There are of course multiple combinations of these prototypical models that we do not address in this paper (Kağıtçıbaşı, 2007a; Keller, 2007).

The aim of the present study is to contribute to the understanding of the developmental foundations of the self in the context of early parenting in these two distinct ecocultural contexts. We compare face-to-face contact and body contact weekly over the first 12 weeks in German urban mother–infant interactions with Cameroonian Nso farming mother–infant interactions from the Kumbo-Bui Division in Northwestern Cameroon. As a second avenue to cultural models of the self, we assess the maternal discourse style during these interactions when the infants are 4, 8, and 12 weeks of age. Furthermore, we address the relationships between nonverbal (body contact and face-to-face contact) and verbal (discourse style) parenting practices.

The culture of German middle-class families

Germany has approximately 80,000,000 inhabitants of which 87% live in an urban environment. Life expectancy at birth in Germany is about 73 years for men and 79 years for women. The birth rate per 1,000 inhabitants in 1993 (the year in which the data of the German sample was collected) was 11 (world average: 25.5), reflecting a total fertility rate of 1.3. The death rate per 1,000 inhabitants was 11 (world average: 9.3). The infant mortality rate per 1,000 live births was seven (all numbers from the CIA World Factbook, 1993).

Middle-class Germans usually marry in their late twenties and the husband is often two to three years older than the wife. The mean age for first time mothers is about 29 years and for fathers approximately 32 years.

Table 1. Description of the samples

	Age mother (years)		Years of schooling (mother)		Gender		Birthrank	
	M	(*SD*)	*M*	(*SD*)	Male	Female	First	Later
Cameroonian sample ($N = 30$)	27.1	8.8	8.2	2.0	13	17	10	20
German sample ($N = 20$)	30.7	3.8	14.3	3.2	11	9	20	0
Total sample ($N = 50$)	28.7	6.5	10.8	4.0	24	26	30	20

Family values and socialization goals are rooted in the norms and values that characterized Protestantism stressing individual responsibility, freedom, and introspection (Ahnert, Kraetzig, Meischner, & Schmidt, 1994). Thus, German middle-class parents firmly believe in individuality, which they want to instill into their children (LeVine & Norman, 2001). During the earliest stages of development, parents' priorities are directed at the autonomous self-regulation of their infants. For example, they encourage their children to sleep alone, often in a separate room.

The culture of Nso farmer families

The Nso population covers around 217,000 inhabitants living in the Kumbo-Bui Division of the North-West province of Cameroon. The average life expectancy for Cameroon is 48.0 years, with a fertility rate of 4.6 children born per woman (CIA World Factbook, 2003). The mean age of mothers at the birth of the first child is 19.8 years (Yovsi, 2003). Infant mortality rate is 68.8 per 1000 births (CIA World Factbook, 2003). Mortality varies with environmental factors such as the source of drinking water and distance to health services.

Nso villages are made up of several unfenced compounds, which consist of houses grouped around a center. The settlement pattern is patri-local and children settle at their father's homestead. All households are extended family systems with three or more generations. On average, 6.7 persons live in one household (Keller & Yovsi, 2005). The father, or another adult male, is the head of the household and he decides on crucial matters with other household heads of the lineage. The villages are headed by a lineage head (*Shufaay* or *Faay*) under the paramount head of the Fon (king) of Nso.

Although both cultural communities, German middle-class families and Nso farmer families, differ in terms of the size of the social networks in which infants are socialized and the role of others as cultural agents, the mother is nevertheless the primary caregiver during the first half-year of life (Yovsi & Keller, 2003). We therefore restrict our analysis to mother–infant interactions.

Based on the theoretical considerations outlined above and previous cross-cultural studies of parenting 3-month-old babies in German middle-class and Nso farming families (Keller, Yovsi, & Voelker, 2002; Keller, Yovsi et al., 2004), we expect significant differences between the two samples with respect to body contact and face-to-face contact. With respect to the longitudinal development within the first three months, we expect a significant increase of face-to-face contact in the German sample, in line with previously reported findings from Western middle-class samples (e.g., Adamson, 1995; Reddy et al., 1997). This increase is based on the infant's growing ability to return and maintain facial exchange over the first three months (Slater, 2004). Since face-to-face contact is not emphasized in Nso ethnotheories of parenting (Keller et al., 2002), we do not expect temporal variation in face-to-face contact in the Nso sample. With respect to body contact, we expect a low and decreasing amount over the assessments in the German sample, since German mothers want their babies to become increasingly independent, also physically. We expect the Nso mothers to maintain significantly higher and stable degrees of body contact over the assessments, since a high amount of body contact during the first months of life is regarded as an indicator of good parenting in Nso ethno-psychology.

With respect to the discourse practices we expect German mothers to emphasize autonomy during the interactional situations, whereas we expect the Nso mothers to emphasize relatedness. Based on findings demonstrating similar discourse styles towards 3-month-old and three year old children (Keller & Demuth, 2007; Wang, Leichtman, & Davies, 2000), we do not expect temporal variation over the three-month period. Moreover, we expect an emphasis on face-to-face to be related to a focus on autonomy in conversational behavior, while an emphasis on body contact is expected to be associated with a focus on relatedness in verbal interactions.

Method

Participants

50 mother–infant dyads from the Cameroonian Nso farmer and German middle-class communities participated in this study. The German sample of 20 mothers and their infants was collected in 1993. The Nso sample of 30 mothers and their infants was collected in 2002.

Table 1 shows the sociodemographic data of the samples. The German mothers were between the ages of 26 and 40 years and on average 30.7 years at the time of infant birth. The mean level of formal education of the mothers was high with about 14.3 years of schooling. All the women were living with the father of their child in a stable relationship. The 11 male and nine female infants were all firstborns; they were delivered without any birth complications and did not have health problems during the assessment period (cf. Table 1).

The Nso mothers had a mean age of 27.1 years ranging from 17 to 47 years of age at the time of the study. The mothers had attended school for 8.2 years on average. The majority of the mothers in the sample were married (70%). Concerning the characteristics of the infants, 13 were males and 17 were females. Ten infants in the Nso sample were firstborns; all infants were delivered without any birth complications and did not have health problems during the assessment period (cf. Table 1).

There were no differences between the two samples concerning gender, $\chi^2(1) = .65$, $p > .05$, and age of the mother, $t(43) = 1.9$, $p > .05$, the differences concerning birth rank, $\chi^2(1) = 22.22$, $p < .001$, and education of the mother (years of schooling), $t(46) = 8.2$, $p < .001$, were significant. These differences confirm that the two samples reflect the two prototypical environments for which they were selected.

Procedure

The participating mother–infant dyads were videotaped and interviewed by native female research assistants at home, in their native languages, weekly during the first 12 weeks.

The German mothers lived in Muenster, a city in West Germany with about 267,000 inhabitants. They were contacted during the last trimester of pregnancy and during birth preparation classes. The mothers who consented to participate were given appointments for the filming schedule. The Nso participants lived in the village Kikaikelaki with a population of approximately 1,500 inhabitants. The mothers were contacted in the local health center. Before interested women could register, the residences and addresses were recorded in order to contact the family head (husband, grandparent, or lineage head), who had to give consent first.

The study and the assessment procedures were explained to the family (Nso) and to the mothers (German). The mothers were told that we would like to learn more about parenting and childcare in different cultures. Therefore, we would like to videotape mother–infant free-play interactions. After the first videotaping session, the German mothers answered a questionnaire concerning sociodemographic information and infant's health. The Nso mothers were interviewed in their native language Lamnso to assess this information, because they were not used to questionnaires and some of them were not able to read or write. The videotaping sessions were repeated weekly on the same day that the child was born plus or minus two days, at a time of day convenient for the mother. Confidentiality of the information was assured to all participants.

Videotapes were recorded with one camera and in identical procedures in both cultures when the child was awake, fed, and not crying. Mothers of both cultural communities were instructed to play with their infants as they normally would. No further instruction was given to ensure that mothers selected the position and situation that was most natural to them. The videotaping of play episodes was about 10 minutes each. The attention span of infants during the early months does not allow for longer interactional episodes. To ensure the comparability, only intervals with an awake and positive state of the infant were coded. The mean length of the German videotapes was 7.63 minutes and mean length of the Nso videotapes was 8.79 minutes. The Nso videotapes were significantly longer, $t(47) = 4.05$, $p < .001$. This difference was controlled for in the statistical analysis.

The coding system of nonverbal mother–infant interaction.

The videotaped free-play interactions were analyzed by two coders with a computer-based video analysis system to cover interactional experiences of infants. Using a time-sampling method based on 10-second intervals, the two parenting systems' body contact and face-to-face contact were coded. Both variables are not mutually exclusive and can co-occur within a 10-second interval. Episodes where the mother or child could not be clearly seen on the video were excluded from the analyses (all 12 assessments were coded).

Face-to-face system. The face-to-face system was defined as the effort of a mother to position her body and head towards her infant in a way that allowed face-to-face interaction. The distance between their faces was neither too close nor too far for eye contact, and the angle between the mother's face and body and the axis of the infant's shoulders was a maximum of 45° so that the baby could simply look straight ahead or did not have to move the head more than 45° to have eye contact. Face-to-face was coded when the mother created a situation like this for at least half of the interval. The score used in the statistical analyses was a ratio score indicating the percentage of 10-second intervals in which face-to-face was coded.

Body contact system. Body contact was coded each time when one of the following body positions lasted for at least half of the 10-second interval: both legs of the child are in contact with the mother, both legs and/or parts of the torso of the child are in contact with the mother, or the whole or almost the whole body of the child is in contact with the mother. In any other case "no body contact" was coded. The final score for the analyses was a ratio score indicating the percentage of 10-second intervals in which body contact occurred.

Interrater reliability. The reliabilities for face-to-face contact and body contact were calculated on the basis of a sub-sample of 14 mother–infant dyads each analyzed by two independent coders who were blind to the hypotheses. To obtain a coefficient of agreement, Cohen's Kappa was calculated and resulted in $\kappa = .86$ for the face-to-face system and $\kappa = .81$ for the body contact system.

The coding system of the verbal mother–infant interaction.

The same video sequences were analyzed with respect to the discourse style. The Nso videotaped interactions were transcribed into English. Therefore Lamnso, the spoken language of the Nso, was translated word by word into English by bilingual research assistants. Transcripts were coded according to a manual developed on the basis of Fivush (1994), Mullen and Yi (1995), Reese, Haden, and Fivush (1993), Wang (2001), and Wang and colleagues (2000) (the assessments for the infants' age of 4, 8, and 12 weeks were coded).

The following categories were defined as indicators of an agency supporting maternal discourse style.

Mental states. The mother refers to the baby as having, developing, or initiating intentions, volitions, cognitions, emotions, preferences, or decisions.

Statements of needs. The mother refers to individual needs of the baby or their fulfillment.

Evaluations. The mother evaluates the situation or praises the child.

Self-referral. The mother refers to herself as the speaking person or her own experiences with her own child.

The following categories were defined as indicators of a relatedness supporting maternal discourse style.

Co-agency. The mother refers to the child as acting together with somebody else (mostly the mother herself).

Social context. The mother talks about the social context or other persons.

Reference to authorities. The mother refers to moral correctness, social regulations, or concerns with authority.

Address. The mother is addressing the child in a respectful (e.g. with traditional title) or functional (e.g., son) manner.

Each occurrence of one of these categories was coded. To compute the composite scores of agency and relatedness, the frequencies of the respective categories were summed and controlled by the number of spoken words.

To assess inter-rater reliabilities 20% of the transcripts were coded by a second coder. Cohen's Kappa as a measure of reliability ranged from $\kappa = .76$ to $\kappa = .91$ for the categories assessing the agency promoting maternal discourse style, and from $\kappa = .86$ to $\kappa = .98$ for the categories assessing the relatedness supporting maternal discourse style.

Results

First, we calculated the interrelations between the parenting systems for all 12 points of time. The face-to-face contact assessments correlated positively with each other and so did the body contact assessments. The mean correlation of the face-to-face assessments was $r = .51$ ($SD = .24$), while the mean correlation of the body contact assessments was $r = .56$ ($SD = .25$). The face-to-face contacts and body contacts were negatively correlated with a mean $r = -.33$ ($SD = .17$). The calculation of the means and *SD*s was based on Fisher's *z*-transformation. Because of the reduced samples not all correlations reached the significance level when they were calculated separately for the cultural samples.

For analyzing the development of the face-to-face and body contact system over the 12 assessments as well as the differences between the two samples, repeated-measure MANOVAs with time as within-subject factor and sample as between-subject factor were calculated. Dependent variables were face-to-face contact and body contact.

The results revealed a significant main effect for the difference between the samples, $F_{(2, 46)} = 28.68$, $p < .001$, $\varepsilon^2 = .55$. As predicted, the univariate analyses showed that the two samples differed significantly in the amounts of both parenting systems ($F_{(1, 47)} = 33.45$, $p < .001$, $\varepsilon^2 = .42$ concerning the face-to-face system and $F_{(1, 47)} = 42.03$, $p < .001$, $\varepsilon^2 = .47$ concerning the body contact system). Face-to-face situations were significantly more frequent in the German sample, and body contact was significantly more frequent in the Nso sample. Post hoc tests revealed that only the amount of face-to-face situations at time point 1 did not differ significantly between the two samples. Figures 1 and 2 visualize the distribution of the two parenting systems over the 12 points of time for both cultural samples.

The relevant effect for the longitudinal differences was the interaction between the within-subject factor (time) and the between-subject factor (sample). The results of the MANOVA indicated a significant interaction, $F_{(22, 1034)} = 3.40$, $p < .001$, $\varepsilon^2 = .07$. The univariate analyses showed that the interaction was significant for the face-to-face system, $F_{(11, 517)} = 5.71$, $p < .001$, $\varepsilon^2 = .11$. This effect was due to the increasing percentage of face-to-face situations in the German sample and the decrease in the Nso sample (see Figure 1). Furthermore, the analyses of inner subject contrasts showed a significant linear interaction between sample and face-to-face system, $F_{(1, 47)} = 30.39$, $p < .001$, $\varepsilon^2 = .39$. The interaction was not significant for the body contact system, $F_{(11, 517)} = 1.42$, $p > .05$, $\varepsilon^2 = .03$.

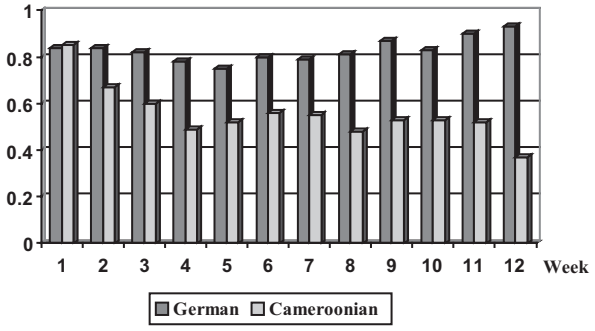

Figure 1. Distribution of the face-to-face situations during the first 12 weeks of life.

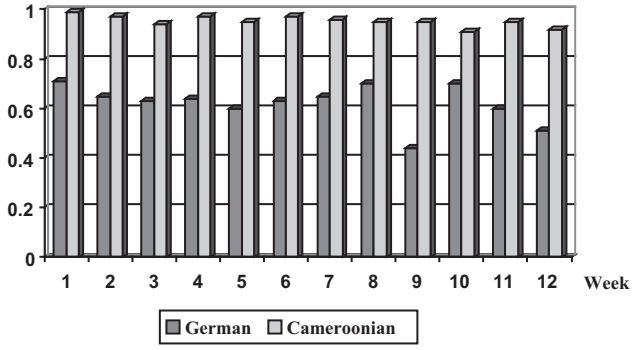

Figure 2. Distribution of the body contact situations during the first 12 weeks of life.

Before the relations between maternal discourse styles and the parenting systems body contact and face-to-face contact were analyzed, the interrelations within the dimensions of verbal behavior for the three assessments at 4, 8, and 12 weeks were identified. All three scores of the autonomy-supporting discourse style correlated positively with each other and so did the scores of relational discourse style. The correlations for autonomy were $r = .31$, $p < .05$ (4 and 8 weeks), $r = .46$, $p < .01$ (4 and 12 weeks) and $r = .72$, $p < .01$ (8 and 12 weeks). The respective correlations for relatedness were $r = .34$, $p < .05$, $r = .33$, $p < .05$ and $r = .44$, $p < .05$. Autonomy and relatedness supporting discourse style were negatively correlated through all assessments. Again because of the reduced samples not all correlations reached the significance level when they were calculated separately for the cultural samples.

In order to analyze differences with regard to autonomy and relatedness in the verbal interactions of the mothers with their infants, a second MANOVA was calculated with time as within-subject factor and sample as between-subject factor. Dependent variables were the scores of discourse style supporting autonomy and relatedness. The results showed again a significant main effect for the differences between the samples, $F_{(2, 47)} = 64.09$, $p < .001$, $\varepsilon^2 = .73$. The univariate analyses showed that there were significant differences for both dependent variables: the score of the discourse style supporting autonomy was significantly higher in the German sample, $F_{(1, 48)} = 92.40$, $p < .001$, $\varepsilon^2 = .66$, while the relatedness supporting discourse style was more prominent in the Nso sample, $F_{(1, 48)} = 52.50$, $p < .001$, $\varepsilon^2 = .53$. Figures 3 and 4 show the distributions. The interaction between the within-subject factor (time) and the between-subject factor (sample) was not significant in this case.

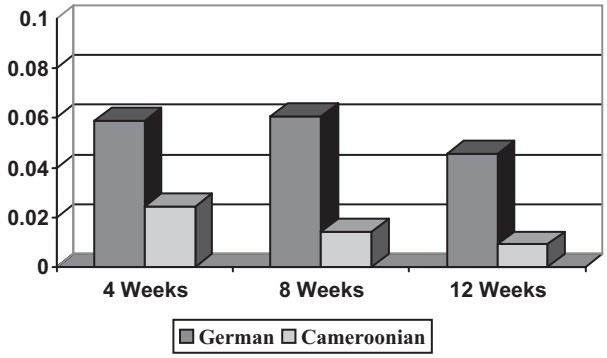

Figure 3. Proportion of autonomous discourse style.

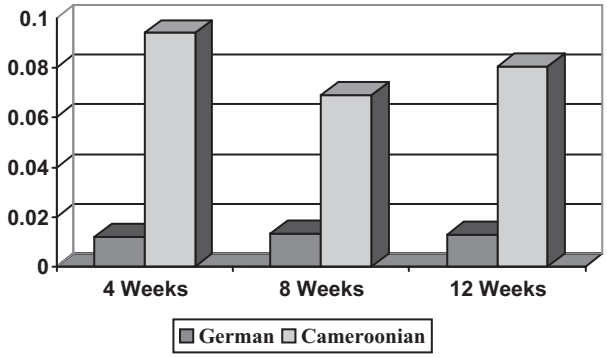

Figure 4. Proportion of relational discourse style.

Table 2. Correlations between the dimensions of verbal interaction and the parenting systems

	Body contact situations	Agentic discourse style	Related discourse style
Age: 4 weeks			
Face-to-face situations	−.33*	.42**	−.35**
Body contact situations		−.24	.24
Agentic discourse style			−.39**
Age: 8 weeks			
Face-to-face situations	−.37**	.19	−.37**
Body contact situations		−.03	.29*
Agentic discourse style			−.34*
Age: 12 weeks			
Face-to-face situations	−.56**	.71**	−.57**
Body contact situations		−.55**	.32*
Agentic discourse style			−.55**

Note. * = $p < .05$; ** = $p < .01$

Table 2 shows the correlations between the dimensions of maternal discourse style and the parenting systems (face-to-face and body contact system). The analyses were related to the times of measurement with assessments for all relevant variables (i.e., with 4, 8, and 12 weeks). The general correlational pattern indicated that the autonomy-supporting discourse style showed significant relations to the face-to-face system, while the relatedness-supporting discourse style was closely related to the body contact system. On the other hand, there were negative correlations between autonomy-supporting verbal behaviors and body contact and also between relatedness-supporting verbal behaviors and the face-to-face system. Because of the reduced sample sizes, the correlations did not reach the significance level when they were calculated separately for the cultural samples.

Discussion

The results of our study confirm our expectations in identifying two parenting styles that are characteristic for two prototypical sociocultural environments: Nso farming mothers on the one hand, and German middle-class mothers on the other. Although German and Nso mothers display the same amount of face-to-face contact in week one, the subsequent assessments differ significantly. German babies experience significantly more face-to-face contact in free-play interactions through the first three months of life than Nso babies do. Nso mothers perform significantly and consistently more body contact from the beginning than German mothers do. The longitudinal data thus support previous cross-sectional studies that assessed interactional experiences of 3-month-old babies (Keller et al., 2009; Keller, Yovsi et al., 2004).

The importance of the face-to-face context as the dominant parenting system is explained by a German middle-class mother in an interview about best parenting of a small baby:

> Eye contact is absolutely important, that the baby looks at the mother and seeks contact through the eyes . . . . It is important that the baby concentrates on the mother first without other stimuli; these are the first steps, to establish eye contact and maintain it for a short while." Another mother explains that " . . . communication in the first time is only possible through the eyes . . . (Keller, 2005)

The importance of body contact is explained as follows by a Nso mother: "It is a very good thing to be cuddling your child on your body. At least it has many advantages. You can cuddle a child like this one on your body so that the child should be stronger, and you will also be looking at the precious gift from God and admire. When you have a child while surrounding him with your arms, when you cuddle like that, he will be feeling fine in his body. Yes then the child will be growing well" (Keller & Yovsi, 2005).

Our data show also the expected increase of face-to-face contact only in the German sample. The increase can be explained to document infants' maturation of the ocular system that allow longer and more focused gazing episodes, which in turn reinforce mothers' interest in eye contact with their children (Keller, Gauda, Miranda, & Schoelmerich, 1985). Since the Nso mothers do not regard face-to-face contact as their parenting priority, they do not provide the visual frame for eye contact to the same extent, so that infants' maturation does not show the same reinforcement effect as observed in the German sample. Thus, this result may demonstrate an interaction between maturation and cultural influences. The high amount of face-to-face interactions of Nso mothers in the first week is, however, unexpected. A possible explanation could be seen in an increased interest to look at and to get familiar with the newborn infant. When this initial interest decreases, the primary socialization strategies get more weight and the proportion of face-to-face interactions decreases.

The analysis of the maternal discourse style supports the assumption that German mothers talk more about agency whereas Nso mothers talk more about relatedness. The differences are significant across the assessments. For this analysis we had selected assessments with 4, 8, and 12 weeks as representing different

developmental stages during the first three months. Moreover, the two styles correlate negatively with each other. The autonomous discourse style is characteristic for the urban middle-class, whereas the style of relatedness is characteristic for formally low-educated families (Cain, 2004, 2005).

We can also confirm our hypothesis that face-to-face contact and the autonomous discourse style correlate positively and face-to-face context and the style of relatedness correlate negatively with each other over time, whereas body contact and the style of relatedness correlate positively with each other and body contact and the autonomous style correlate negatively with each other. These correlations validate body contact and face-to-face contact as supporting different socialization strategies.

Parenting can therefore be regarded as expression of broader cultural models (Greenfield, Keller, Fuglini, & Maynard, 2003; Harwood, Handwerker, Schoelmerich, & Leyendecker, 2001). An emphasis on face-to-face contact and stressing agency in verbal conversations defines a distal parenting style, which is characteristic for urban educated middle-class families where the highly educated mother is in her late twenties when she parents her first child. An emphasis on body contact and stressing relatedness in the verbal conversations is associated with a proximal parenting style which is characteristic for rural, formally low-educated families where mothers are young when they have their first child and usually have more than one child (Keller et al., 2009).

German middle-class mothers and Nso farming mothers can thus be regarded as representing prototypes for the cultural models of independence and interdependence (Keller, 2003). Maternal formal education, age, and parity are thus interrelated in forming socialization milieus that provide particular experiences for the baby. In other words, different sociodemographic characteristics represent the specific cultural surroundings of children (LeVine, 1990). These prototypical sociocultural environments are associated with different socialization goals and parenting practices as we have demonstrated with different samples from these sociocultural environments (Keller et al., 2009). With the present study, we extend these findings in two respects: first, we can demonstrate the longitudinal development over the first three months of life as demonstrating culture-specific biases. Second, we were able to demonstrate that nonverbal parenting behaviors and discourse styles relate in meaningful ways to each other and form consistent parenting strategies as early as during the first three months of life. This pattern is consistent over three different points in time which may reflect infant's different communicative stages.

Our study also has constraints. The two samples belong to different historical cohorts almost 10 years apart. However, the effect of cohort would be directed against our hypotheses since the German sample has been assessed 10 years earlier than the Nso sample. In a historical comparison of interactional behaviors of German middle-class mothers 25 years apart, we did find significant increases in face-to-face context and significant decreases in body contact (Keller & Lamm, 2005). In another short-term historical study over five years we did not find changes in Nso parenting style (Keller, Borke, Yovsi, Lohaus, & Jensen, 2005). It can therefore be expected that the comparison with a contemporary German sample would reveal even larger differences.

Our study is restricted to three domains of parenting, which nevertheless can be regarded as central for the age range under study and for cross-cultural differences in parenting small babies. Further studies should analyze the regulations within these parenting systems as well as the children's contributions in more detail. In addition, future research should also cover a longer time span and study cultural patterns of parenting across a broader range of children's developmental phases, with the inclusion of other caretakers besides the mother.

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Commentary 1

William M. Bukowski[1]

The typical challenges associated with the study of human behavior are often magnified in assessments of contextual differences in development. The basic questions that one needs to address in any study—which constructs should be studied and how to measure them, how to state and test hypotheses, how to choose and recruit a sample of participants to be studied, and how to compare contexts to each other and then interpret any differences that are revealed—are often, if not always, more difficult to answer when one is studying developmental processes in two places rather than just one. The present study by Keller, Borke, Lamm, Lohaus, and Yovsi (2010) is an example of a study that presents many of these magnified challenges.

This study of mother–infant interactions in two places has a particular strength that should not be overlooked. Using a careful set of observations collected over time, it provides evidence of a difference in a basic feature of human experience, specifically how infants are treated by their parents, in this case their mothers. A basic component of all forms of science is description. Knowing what humans do and assessing the variability in how they do it are

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prerequisites for each of the subsequent steps in the scientific study of human action. The present study is valuable as it points to the intersection between two forms of variability, one form showing a variation or difference between groups and other showing variability (i.e., change) over time. The especially interesting feature of Keller et al.'s results is the observation that group differences become larger over time. This pattern of findings shows that the emergence of a basic form of human interaction unfolds differently in one context than in another. This observation is potentially interesting as it points to a form of diversity in development. Keller et al. wish to attribute the differences they have observed to cultural differences between their two groups of participants. One of their groups includes mothers living in Germany; the other includes Nso mothers from Cameroon.

Making a "cultural" interpretation of the differences observed in this study is, of course, tempting. After all, a difference was observed between mothers from two places who are presumed to differ from each other in their "culture." When different places produce different findings, a culture-based interpretation is possible. Nevertheless, before one decides whether or not this interpretation is warranted, it may be worthwhile, if not necessary, to consider whether the conditions that would permit a cultural interpretation exist in the present study. The particular conditions that one needs to identify in order to reach a conclusion about the presence of a contextual/cultural difference have been described from both statistical/quantitative (e.g., Little, Bovaird, & Card, 2007; van de Vijver & Leung, 1997a, 2000) and substantive/conceptual points of view (e.g., Markus & Hamedani, 2007). In spite of the differences in the nature of their analyses, each of these two perspectives (the quantitative and the qualitative) emphasizes the importance of achieving two interrelated conditions, specifically (a) identifying and measuring the multiple factors that vary between and within the contexts being studied, and (b) accounting for the effect of these variables on the outcomes of interest. These conditions are manifested as a need for sample equivalence (i.e., that two groups are equal in all ways except for "culture") and a need for a way to have an index of culture that is not confounded with other phenomena. The possibility of a valid cultural interpretation depends on how well these conditions have been met.

Two issues arise in the assessment of sample equivalence in the present study. One issue is whether each sample is equally representative of the communities/cultures from which they are drawn. The other issue is whether the critical difference between them is the specific cultural dimension that forms the centerpiece of the cultural interpretation that is proposed. The present study appears to deviate from equivalence in two inter-related ways. Specifically, although the Nso mothers from Cameroon have a level of education that is above the norm for mothers in their region, they nevertheless appear to have a substantially lower level of education than is seen among the German mothers. Accordingly, one can legitimately wonder (a) if the Nso mothers who were studied are actually representative of the mothers from their "culture," and (b) if the differences observed between them and the German mothers derive from a difference in culture or from a difference in education. In so far as variations in education are correlated to several skills linked to the measures used in the present study (e.g., verbal abilities), the confounding of education and culture makes it difficult to reach an unambiguous cultural interpretation. Perhaps the presence of two levels of education within each sample would have been useful. Being able to account for differences in education would have strengthened the interpretive platform of this project.

Having a more direct measure of culture would have been valuable also. The lack of a direct measure of the cultural dimensions that distinguish these two samples from each other is a further impediment to unambiguous interpretations. Even if one had been able to show that the observed differences between these two samples remained after the differences in education had been accounted for, attributing these differences to particular culture-based processes would continue to be largely speculative. We would see a difference but we would not be able to assess how particular culture-based patterns of association would account for them. Having a more complex set of measures that would have captured the socio-cultural factors that distinguish these two groups from each other would have allowed a fuller and more focused explication of why these groups of mothers were observed to interact differently with their babies. This opportunity would have gone further than where we are at present to increase the understanding of mother–infant interaction and of cultural diversity in development.

At the outset it was stated that the study of contexts, and the cultural processes related to them, present challenges. Like people, contexts are complicated "wholes" rather than simplistic collections of variables. The value of the present study is its effort to demonstrate variability across contexts in a critical feature of human experience, specifically parent–infant interaction. The next wave of studies on diversity and development needs to include contextual assessments that will promote our understanding of why development varies across places.

Commentary 2

Patricia M. Greenfield[1]

The paper by Keller, Borke, Lamm, Lohaus, & Yovsi (this issue) is a brilliant tour de force. To my knowledge, this is the first time that maternal discourse and nonverbal maternal caregiving practices have been related to each other with quantitative and cross-cultural methodology. Another methodological strength is the repeated measures over developmental time (the first three

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months), so that not just socialization at one time point, but socialization *trajectories* become illuminated. What Keller and colleagues show is that the symbolic structuring of the child as an independent agent through discourse is part and parcel of caregiving behaviors that promote independence, and is a pattern typical of German mothers; in contrast, the symbolic structuring of the child as a socially interdependent being through discourse is part and parcel of caregiving behaviors that promote interdependence, and is a pattern typical of Nso mothers in Cameroon, West Africa.

In the rest of this commentary, I would like to address Keller et al.'s methodological strategy of comparing socialization in what the authors term "two extreme environments" or "two prototypical socialization contexts." Their contrast is between the poor, subsistence, low-tech, rural environment of the Nso and the relatively rich, commercial, high-tech, urban environment of a German city. Each environment clearly consists of a whole suite of contrasting characteristics. This is the opposite of the usual methodological strategy in psychological research, where one varies only a single characteristic at a time, while holding all remaining variables constant. However, my view is that Keller et al. have developed an important new research design for psychology; the rest of my commentary will explain why.

In a recently published theory of social change and human development (Greenfield, 2009), I have elaborated Keller et al.'s strategy at the sociodemographic level, utilizing two sociodemographic prototypes introduced by the German sociologist Tönnies (1887/1957): *Gemeinschaft* (community) and *Gesellschaft* (society). Gemeinschaft communities are relatively poor, rural, subsistence-based, small-scale, technologically simple, homogenous, and relatively self-contained with education taking place at home (think Nso). Gesellschaft societies are relatively rich, urban, commerce-based, large-scale, technologically complex, heterogeneous, and permeable, with most education taking place at school (think German middle-class). In my theory, as in Keller et al., interdependence is a developmental goal adapted to a Gemeinschaft world; independence is a developmental goal adapted to a Gesellschaft world.

Advantage #1 of comparing prototypical environments: parsimony. Each component of a Gemeinschaft world moves development in the same direction, while each component of a Gesellschaft world moves development in an opposite direction (Greenfield, 2009). Thus, urbanization, technological development, school-based education, and commerce each move socialization in a direction that favors a developmental trajectory of independence; while rural residence, simple technology, family-based education, and subsistence lifestyles each move socialization in a direction that favors a developmental trajectory of interdependence. The effect of each component on development can be, should be, and has been studied separately (e.g., Greenfield, Maynard, & Childs, 2003, commercial activity; LeVine et al., 1991, schooling); however, the equipotentiality of each component is an important feature of the theory (Greenfield, 2009). Thus, the prototypes represent a combination of environmental components that have an identical and mutually reinforcing effect on pathways of socialization and development.

Looking at parsimony the other way around, the developmental goal of interdependence is adapted to each and every component of the Gemeinschaft environment, while the developmental goal of independence is adapted to each and every component of the Gemeinschaft environment. For example, independent behaviors are adaptive for an urban environment, a commercial environment, and a technologically complex environment; interdependent behaviors are adaptive for a rural environment, a subsistence environment, and a technologically simple environment. Hence, there is parsimony in linking pathways of socialization to prototypical environments that combine a whole suite of characteristics favoring the same developmental pathway.

Advantage #2 of comparing prototypical environments: globalization. From the perspective of social change, the world is in general moving towards ever more extreme Gesellschaft values: urbanization, commerce, complex technology, increasing formal education (e.g., Kağıtçıbaşı, 2007b; Greenfield, 2009), so the bundling of components into prototypical environments allows predictions concerning the effects of global social change on pathways of socialization and development.

Advantage #3 of comparing prototypical environments: ecological validity. Gemeinschaft and Gesellschaft have ecological validity in terms of expressing systemic dependencies and relationships at the sociodemographic level. Whereas, in psychology, we are used to examining systemic dependencies on the individual level, we typically try to isolate variables at the sociodemographic level. However, we need to recognize that this more macro-sociodemographic level also has systemic dependencies. For example, subsistence environments are intrinsically rural and relatively poor, while highly developed commercial environments are intrinsically urban and relatively rich. Keller et al.'s prototypes implicitly recognize these environmental dependencies. In the present research, Keller et al. utilize systemic dependencies on the sociodemographic level when they compare rural Nso mothers of Cameroon with middle-class German mothers to identify contrasting pathways of early socialization.

Lest this seem a binary perspective (urban vs. rural, subsistence vs. commerce, etc.), it is not; both in my theory and in Keller et al.'s research, each characteristic is treated as a dimension with a variety of intermediate values (Keller, 2007). Indeed, as noted in the present article, Keller and others have, in other research, illustrated that intermediate sociodemographic values lead to intermediate results on the level of socialization.

Keller (2007), Kağıtçıbaşı (2007a) and others have also studied intermediate examples where not all environmental variables are in synch (e.g., middle-class urban environments in which parents grew up in rural areas). So, what happens when a person experiences a mixture of Gemeinschaft and Gesellschaft characteristics in their upbringing, usually under conditions of rapid social change? One would predict maladaptive pathways of socialization and development, confusion, or inner conflicts between two sets of socialization goals. Gratier (2003) has made an interesting start in exploring this issue; but much more research is needed. In the meantime, let us not lose sight of the fact that we have much to learn by describing in detail the developmental pathways that are adapted to two important prototypes in the cultural history of human beings.

Commentary 3

Fons J.R. van de Vijver[1]

Dichotomies continue to play an important role in psychology. The distinction between independence and interdependence is a currently popular example. Building on work by, amongst others, Hofstede (1980) on individualism–collectivism, Markus and Kitayama (1991) wrote a seminal article on the distinction between the relational, interdependent self and the autonomous, independent self. The distinction is also used by Keller et al. (2010), whose work tests the assumption that the relational patterns that are characteristic of a society are already established early in infancy; in more recent work she has shifted to a similar distinction by Kağıtçıbaşı (2007a) between autonomy and relatedness. Keller et al.'s innovative line of research exemplifies these dichotomies in the context of a comparison of face-to-face interactions and body contact among Cameroonian Nso and German mothers.

Greenfield, the first commentator, claims that Keller et al.'s study points to two incompatible ways of organizing human societies: a *Geimeinschaft* with strong ties between its members living together in small groups versus a *Gesellschaft* with loose ties between its members that live in large groups. Close body contact is more prevalent in a Gemeinschaft (such as the Nso) where children are taught the value of close relationships, whereas face-to-face contact is more prevalent in a Gesellschaft (such as Germany). It is a strength of Keller et al.'s study that she document these differences so clearly. Bukowski, the second commentator, is more critical; he argues that Keller et al.'s study has an important design limitation. The cultures that are studied are very different (e.g., Germany has a Gross Domestic Product per capita that is 15 times as large as that of Cameroon) and independence–interdependence is just one of the differences. The study described by Keller et al. shares an important shortcoming of many two-group comparisons (van de Vijver & Leung, 1997a): How can we be sure that the differences in infant–mother interactions that are observed are due to differences in in(ter)dependence of the two countries, and not to other differences between the two cultures? Bukowski argues that Keller et al.'s study is inconclusive if alternative explanations like level of schooling of the mother have not been adequately scrutinized.

The difference in viewpoint between Greenfield and Bukowski illustrates different lines of thinking about the comparison of extreme groups in psychology. On the one hand, there is a more supportive attitude according to which choosing cultures with extreme positions on a particular continuum is informative as extremes show prototypes (of independence–interdependence in the present case) in their purest form. On the other hand, there is a more critical attitude according to which choosing cultures with extreme positions entails various risks; comparisons of extreme groups are always convoluted, as the cultures differ not only in their standing on the target construct but typically also on a smaller or larger set of confounding factors. These attitudes, which could be easily construed as incompatible, are complementary in my view; both address different aspects of building up valid scientific knowledge. The age-old interest in science in prototypes attests to their widely perceived value; however, it is equally true that the comparison of prototypes as studied here, groups of mothers from very different cultural backgrounds, poses serious methodological challenges that, if unaddressed, leave study results open to multiple interpretations.

The two perspectives on dichotomies are ultimately related to the well-known distinction in the philosophy of science between the context of discovery and the context of justification (Reichenbach, 1938). This distinction is helpful to clarify why both perspectives are compatible and indeed complementary in science. We can only advance our knowledge by venturing into unknown territories (context of discovery); however, the insights that are generated on the basis of these ventures should be subject to empirical scrutiny in later stages (context of justification). Theories should explore new domains to be novel; theories should be adequately tested to be valid. Both aspects are needed for advancing knowledge. It is probably fair to say that Keller et al.'s study is more located in the context of discovery than in the context of justification. Keller et al. suppose the existence of a broad cultural syndrome; though popular nowadays in cross-cultural studies, the syndrome is far from sufficiently validated. Testing all the ramifications of such a syndrome, which is crucial in the context of justification, would probably require the whole active life of more than one researcher. What is tested in Keller et al.'s study is an interesting consequence of the dichotomy. Such a single study can provide necessary yet insufficient evidence for the validity of the framework.

The history of the study of dichotomies in psychology, such as field (in)dependence, has shown that the weak spot of such dichotomies is their boundless nature. This is not different for independence–interdependence. There is no specification in the literature which psychological aspects are influenced and which psychological aspects are *not* influenced by independence–interdependence. If we overload these constructs with ambitions about what they can explain, the end of their popularity is predictable and unavoidable. In order to make real progress we need to be more specific about domains of applicability of the concept of independence–interdependence, and to move beyond the context of discovery to the context of justification.

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